

# **ROCKS and MINERALS**

Official Journal  
of the  
Rocks and Minerals  
Association



A Magazine for  
Mineralogists,  
Geologists and  
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# ROCKS and MINERALS

PUBLISHED  
MONTHLY



Edited and Published by  
PETER ZODAC

May  
1945

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Entered as second-class matter September 13, 1926, at the Post Office at Peekskill, N. Y.,  
under the Act of March 3, 1879  
Copyright 1945 by Peter Zodac Title registered in U. S. Patent Office

specially written articles (as contributions) are desired.

Subscription price \$2.00 a year; Current numbers, 25c a copy. No responsibility is  
assumed for subscriptions paid to agents and it is best to remit direct to the Publisher.  
Issued on the 1st day of each month.

*Authors alone are responsible for statements made  
and opinions expressed in their respective articles.*

ROCKS and MINERALS

PEEKSKILL, N. Y., U. S. A

The official Journal of the Rocks and Minerals Association

## CHIPS FROM THE QUARRY

### MINERALIGHT FINDS VALUABLE ORE BODY IN ARIZONA

W. W. Simon, of Superior, Ariz., (a member of the R. & M. A.) reports the discovery of a new fluorescent calcite in Arizona. The occurrence is on the property of the Sunset Mining Co., about 20 miles southeast of Superior, in the southern part of the state (in N. Pinal County).

The occurrence is quite interesting in that while following up the calcite with the Mineralight, the ore veins of the mine, copper and gold, were located. The calcite does not occur in the ore veins but in a schist which lies next to it. The Sunset Co., has started to develop the vein which shows great promise. This is one instance, at least, where the use of the Mineralight has been responsible for one important find of a non-fluorescent ore body.

In the same locality was found what appeared to be a whole hill of tungsten ore when examined with the Mineralight. The blue color of scheelite, which is so characteristic under the Mineralight, was so pronounced that even experts were fooled; all who examined the mineral under the lamp said it was scheelite. Laboratory analyses, however, proved it to be hydrous zinc carbonate — hydrozincite. Scheelite and hydrozincite have the same identical fluorescence and are easily confused.

The calcite is brownish to dark gray in color and varies from crystalline to crystallized. Under the Mineralight it glows with the most brilliant shades of red imaginable.

Suspecting that manganese was the cause for the calcite to fluoresce, Mr. Simon, an assayer, analyzed the mineral but found no manganese nor any other foreign element in it. Keenly interested in learning what was the fluorescing agent, samples of the calcite were sent to the world-famous laboratories of Lucius Pit-

kin, Inc., in New York City, for a spectrographic test. Dr. A. C. Hawkins, mineralogist for the laboratories, examined the specimens magascopically and spectrographically. His report is as follows:

"The specimens consist of a rock of a dark gray color resembling basalt. This rock was intensely brecciated and later mineralized. There appears to be a very considerable content of copper minerals including cuprite and chrysocolla. The calcite fills all the interstices; it contains evident cuprite in certain places, and, in others, a light lemon-yellow color of uncertain origin.

"A pure sample of the calcite was prepared for spectrographic test. Its main constituent was calcium, of course, but its chief impurity was manganese in amount between 0.5% to 1%. Other elements present, but in amounts much smaller than 0.5% to mere traces, were magnesium, silicon, copper, lead, aluminum, and vanadium. All impurities, except manganese, are possibly unavoidable contaminants from the matrix."

Manganese is present, therefore, and in amounts sufficient to cause the fluorescence in the calcite.

It is gratifying to record that Dr. Hawkins, and Mr. T. A. Wright, President of Lucius Pitkin, Inc., are both members of the R. & M. A.

### Can Anyone Help?

The mother of one of our young members, residing in New York City, is anxious to learn the name and location of a summer camp where mineralogy is taught or at least encouraged. Location of camp is immaterial although one in the East is preferred. If anyone can help with information, please let us hear from you. Address it to Editor, Rocks and Minerals, Peekskill, N. Y.

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## THE METALLURGIST "PAUL REVERE"

By M. D. BOGART

Wellesley Mass.

"Listen my children and you shall hear of the midnight ride of Paul Revere", so the familiar lines go in accord with the famous poem of the immortal Henry Wadsworth Longfellow, so dear to the hearts of all Americans.

When one rambles about old Boston and its environs, should he fail to remember the details surrounding Paul Revere's famous ride, it is not long before he meets up with a representative of the Massachusetts Historical Society after visiting the old Concord Bridge, the old State House and so on, before his memory of early American history is refreshed and he begins to get the truth of the whole story with all the sidelines connected therewith.

It is perhaps less romantic, but more to the point, had that first line read something like this; "Listen my children and you shall hear of the midnight ride of Paul Revere, William Dawes and General Prescott", for after all, these two other fellows were entirely left out when the glory was passed out, and they are rightfully entitled to more credit than they received, inasmuch as their's took up a sizeable portion of the ride made by three men.

After you visit Paul Revere's old home, now preserved intact in the north end of old Boston around the corner from Old North Church, together with visits to the Old State House, Boston Fine Arts Museum and a few other choice spots of this kind, having then seen something of the silverware, copper and other of his metal wares (even sets of iron-alloy false teeth used by George Washington,

and General Warren) it then begins to dawn on one that Paul Revere was more than a fellow who rode on a "hoss" and hollered like hell to awaken our early colonists against the approach of the British. The fact is that Paul Revere was an artisan, that is, a master craftsman and practical metallurgist, foundryman, a designer of remarkable skill in metal wares from exquisite silverware on down the line to copper bottoms for ships and other allied hardware parts. Whereas, now listen my grown children and students of metallurgy and you shall hear of the smelters and metals of Paul Revere. (Apologies to Mr. Longfellow).

Along the north shore from Boston, is the town of Saugus, Massachusetts, on tidewater, and so named after the Saugus Indians. This town was settled before Boston, as a colony, following the landing of the Pilgrims at Plymouth. At Saugus, English gentlemen and American colonists opened bog iron pits, set up a smelter and operated this, the first successful iron smelter in the United States. This was about the year 1640. Paul Revere, years later, took it over and operated it. Here an extensive activity was carried on under the watchful eye of the English interests of that day. A remarkable feature of the mine was its spiral shaft, patterned after old Spanish mines, with a grade so gentle that "hosses" could easily haul the iron ore to the surface. Another iron smelter started up at Braintree soon after, as the coast from Cape Cod on up to Maine is dotted with bog iron pits and smelter sites. This one at Saugus is outstanding in impor-

tance because of its relation to U. S. Navy shipbuilding of that day. Revere copper and bronze fittings were used on both the Constitution (Old Ironsides) and the Essex, of our Colonial navy. Aside from bog-iron, in this coastal area there was practically no other available ore of copper and the other metals available then. Smyrna copper and imported ores were brought in as ballast in English ships and used by Paul Revere in his copper-iron and other alloys. "Yellow-metal" ship bottoms perhaps took the major portion of the output of his smelters.

Paul Revere actually played the part of what we now have as the head of the W. P. B. as related to "strategic metals" for the war effort, and as far as the Metals Reserve is concerned, he was practically a "one man band" in the War of the Revolution, altho I doubt if he had to fill out any "priority" blanks. He was "priority" himself. Recent advertising matter of The Revere Copper and Brass Co., Inc., appearing in current magazines, clearly points out that "Paul Revere earned the rank of Lieut. Colonel and had built two gunpowder plants and further turned his peacetime skills to the manu-

facture of cannon, which also helped in a great measure in winning the Revolutionary War". Revere being very resourceful, utilized local ores wherever available, but used mostly imported ores from even Siberia, China, and the Dutch East Indies.

At Norton, Mass., about 27 miles south of Boston, still in the Revere family, is the site and ruins of the old copper-iron smelter and rolling mill where the Crocker Bros. had an active copper and brass industry, one of the first in America, in about the year 1801. This site is in the town of Norton on the Wading River (a brook, by the way) where there was extensive activity including several smelting furnaces and a rolling mill, which handled copper, brass, bronze and zinc metallic sheets and strips. Copper coin-blanks were punched out of sheets and sent to Philadelphia to the U. S. Government mint for stamping and coinage into some of our earliest Colonial money. The smelter site with its furnaces is adjacent to several bog-iron pits in the vicinity, and the furnaces have been inactive since the year about 1840, now over one hundred years. The old crumbled foundation of the main smelter



*Foundations of copper smelter and rolling mill at Norton, Mass.*



and rolling mill building, is on the north bank of the river. A new state road has covered up some of the site, but not the important part, which lies a few hundred feet in from the road to the east. Water-power available, this smelter was located about one-quarter mile from the first state highway in the United States which ran from Boston to Cape Cod, along which even today, can be seen the original stone marker posts. This road was the means by which long "hoss" or oxen-drawn hauls were made to expedite materials to and from the Revere smelter.

Early in the spring and summer of 1944, the writer made a few trips to the Saugus, Canton, and Norton sites and collected material specimens related thereto, among them were the following:

1. Copper-Iron slag. Color, dull red, heavy and glass-like, with typical conchoidal fracture. This slag was poured off as scum from the smelter.
2. Small Crucibles (fragments). Flake-graphite crucible pots used in the furnaces for melting metals. (Probably of early English origin)
3. Coal Slag. Pieces of clinker containing Mansfield (Mass.) Coal, also charcoal. (Two shaft mines at Mansfield and probably Cumberland, R. I., copper supplied the smelter in part). Charcoal was extensively used in smelting to help purify the melt. Mansfield coal contained remarkable fossil ferns, etc., some of which are declared to be the finest of a very rare species of the Permian age. Large pieces of coal are found contiguous with quartz veins.
4. Copper and Brass Metal Scraps. The writer collected cigar boxes full of fragments of copper and brass sheets, small fragments, nuggets and blobs, including copper coin sheet and several coin blanks (ready for coinage into money).
5. Fire Brick. Some slagged and coated with metallic copper, also some of the very earliest of fire



*Site of first iron smelter in the United States (first iron kettles in U. S. were made here). at Saugus, Mass.*

"brick used in the United States with the trade imprint "F. RUF-FORD, STOURBRIDGE", English imported brick, from the first lot sent to the United States (made on the banks of the Stour River in England), later duplicated and excelled by some of our earliest fire brick manufacturers in the United States at Boston, Taunton, Baltimore, and New Jersey. Other fire brick were found with imprints of "J. B. WILSON, and "P. B. MARVIN, and J. W. INCE, of Taunton, Mass., three of our earliest manufacturers of refractory materials.

6. Segment of Smelter Arch. (Four fire brick with lower part slagged like icicles) with Mansfield Coal attached, also charcoal, truly a very interesting refractory specimen.
7. Metallic Copper-Iron Alloy. (From the melt). Large blobs from the furnaces, containing approx. analysis of from 25 to 34% copper, the remainder largely iron. Some of these pieces run up to one by two feet in size. When hit with a sledge hammer, has typical metallic ring like bell metal.

Excerpts from certain English and American records not found in libraries indicate the Norton copper alloy to be equal to that produced by Paul Revere, which possessed the peculiar properties of a bearing metal, in addition to its toughness and ability to quickly dull and break

steel hack-saws, notwithstanding, it's 25 to 34% copper contents. Consciously or unconsciously. Paul Revere was perhaps the originator of the "Oil-less" bearing? This metal bears investigation as it is thought to possess some of the rarest of metals such as Indium, Gallium, or Germanium. The use of spectroscopic rather than chemical analysis seems to be the best approach to the answer, for typical assaying methods will surely overlook the presence of such rare metals. A spectroscopist familiar with the Iron spectrum and its multitude of wave lengths covering the range for Iron can best determine this. It may lead to sources of these rare minerals, for they will probably be associated with familiar minerals. This Revere metal turns a grayish color when hammered, later loses its surface color brought out by impact.

From Canton, Norton and Taunton, Mass., the Copper and Brass industry, has mushroomed out, merged and expanded to New Bedford, Mass., branched out to Rome, N. Y., Baltimore, Waterbury, and many other points from where this industry has now played such a vital part in our present war effort. The original parent company, "Paul Revere & Son", is now The Revere Copper and Brass Co., Inc. The writer believes it is well worth the time of anyone interested in minerals and metals to read the Life of Paul Revere and the world he lived in, etc., and learn more about our remarkable fellow American and "practical metallurgist".

### **Pennsylvania Amethyst**

Some of the finest crystallized amethyst known, was once found in Delaware County, of S. E. Pennsylvania. Good crystals were found in many parts of the county, but those from the Upper Providence township were magnificent specimens. A number of these very fine specimens are on display in the American Museum of Natural History, New York City.

### **Nice Corundum Crystals Found in Switzerland**

At Campolongo, Canton Tessin, S. E., Switzerland, nice blue and red crystals of corundum, associated with diaspore and green tourmaline crystals, occur in white granular dolomitic limestone.

Campolongo (Campolungo) is in the northern part of Canton Tessin (Ticino).



## OLD COPPER MINES AT NEW BRUNSWICK, NEW JERSEY

By A. C. HAWKINS

The story of old mines is always a fascinating one, and often it grows more and more so with the telling. In order to be assured of not being a party to such a procedure, let us quote directly from the story in the Annual Report of the State Geologist of New Jersey for 1906 (page 151), as follows:

### The New Brunswick Copper Mines

The New Brunswick or French Mine. —About 1748 to 1750 many lumps of native copper weighing from 5 to 30 pounds each, "upwards of 200 pounds" in all, were plowed up in the field of Philip French, now Neilson Campus of Rutgers College, at New Brunswick. A company was formed to mine for copper in 1750 and work was begun by sinking a shaft the following year. Grains of the metal were found in the red shales and sheets in the joint-planes of the rock. Some of the latter "of the thickness of two pennies and three feet square" are said to have been found within 4 feet of the surface.

A depth of 60 feet or more was attained and some of the working are said to have extended several hundred feet under the Raritan River, although there was much difficulty in handling the water. A stamp-mill was erected and many tons are said to have been shipped to England. Similar sheets of metallic copper from one-sixteenth to one-eighth of an inch in thickness and one or two feet across have been found in grading the street east of the campus of Rutgers College, and also in digging a cellar on Somerset Street on the southwest side of the campus. The latter place has been recently partly exposed again, and the copper is found in a zone of bleached grayish shale and in spots of gray mottled with the normal red color along an east-west fissure. . . . Cuprite, malachite, chrysocolla, and azurite are sometimes found incrusting such metallic sheets or entirely replacing them. There is no evidence or indication that trap rock was ever encountered in these old workings. . . . the purple shales, which are also occasionally seen at the surface in this

vicinity, may indicate the presence of intrusive trap at no great depth."

### Old Mine Tunnels Still Exist

The Triassic shales in the vicinity of New Brunswick are highly mineralized locally, especially in the zone near and under the river, where ramify the tunnels of the old mine. The lower levels of the mine are now, of course, filled with water, and the upper ones have been closed and obliterated in various ways until no trace of them appears anywhere above ground. Yet the presence of tunnels at various places on both sides of the river, upstream from the Pennsylvania Railroad's arched stone bridge, has caused much grief in the past to contractors undertaking construction of building foundations. It has been remembered by "the oldest inhabitant" that near the railroad right-of-way on the Highland Park side of the Raritan, a steam shovel one night disappeared into a gaping hole. John A. Manley, for many years a superintendent at the Johnson & Johnson plant on the river, once recounted how at the time when the excavation for the foundation of the big stack at the plant was supposed to have been completed, a workman accidentally dropped a heavy crowbar, which went down through the bottom of the hole into a large open tunnel; and so special strong bridgework was installed to make sure that the weight of the stack should be properly carried. The excavations for basements of other buildings in the immediate vicinity are said to have been unexpectedly costly because of similar difficulties. In earlier days when everything west and north of Queens College building was a pasture, cows fell into the open shafts along the drainage tunnel which followed the line of the present Mine Street to Mine Run. These openings were later fenced in and eventually covered with paving bricks.

### Some Minerals Available Today

A copy of an old map of the copper mine workings may be seen in the Engineering Department at Rutgers University. A hammer and chisel of ancient

vintage, recovered long ago from some forgotten tunnel of the mine, are in the geological museum. The ore which was mined was all shipped away for smelting, and no trace of a dump remains anywhere so far as known, since college and city have completely covered the area. However, an excavation made during the 1930's at the south corner of the Johnson & Johnson plant, on George Street, shows one phase of the ore. The bottom of this hole, which was 30 or 40 feet deep, was in a fine-grained, white, bleached Triassic sandstone; a quantity of chalcocite was disseminated through this rock, accompanied by the green of malachite stains. In the upper part of the hole, the rock was all red shale of the normal Triassic formation. Traces of native copper may still be found today in narrow calcite fillings of joints in the red shales along the river bank farther upstream. Across the little triangular grass-plot at the Y-shaped junction of George Street and College Avenue, there extends a thick stratum of metamorphosed gray shale, saturated with bright-colored malachite and azurite, available to collectors only when sewer excavations happen to be made. A similar gray stratum on the north side of the river, in the bank along the river road (route S-28) not far northwest of the end of the upper bridge (Landing Bridge) now affords azurite in micro-crystals which are clear and blue, to those willing to dig for them. And under the little observatory building, on the edge of the front campus of Rutgers, directly on George Street, gray hornfels shale was dug up, when the street was put through. This shale contains small black tourmaline crystals on which the prism is very narrow vertically and the terminal faces are all obtuse rhombohedrons; there were also nodules of epidote. A number of other interesting minerals, which are available to collectors at the present time, seem to owe their presence to the same metamorphic action of hot solutions and gases from buried trap-rocks, the saturation by solutions seems to have extended some distance from the main ore-bearing fissure. J. G. Manchester, in his book

"Minerals of New York City and Its Environs" gives a list of 37 mineral species and varieties from New Brunswick. A large part of this list was originally compiled by William S. Valiant, for many years curator of the geological museum at Rutgers. The following minerals are available today:

*Barite.* In the red shale bluff along the south bank of the Delaware & Raritan canal, close to the northwest end of the Johnson & Johnson factory, there appear a few prominent white, powdery streaks along the bedding-planes of the red shale. These become wider in certain spots, and in such spots there are sometimes cavities, mostly of small size, which are usually lined with poorly formed calcite crystals, often discolored by material which has percolated in from the shale. At times cavities several inches in length have been exposed; the calcite crystals in them are of the "nailhead spar" type, with obtuse rhombohedron *c* capping the short prism *m*. With the calcite there are a few thin, flat white barite crystals of the familiar shape of the diamond on a playing-card. They average  $\frac{1}{4}$  in. (6 mm.) in longest diameter, and they usually stand on edge. Three much larger pale blue barite crystals of this type obtained here in a lucky season measure  $3 \times 1\frac{5}{8} \times \frac{3}{8}$  in. ( $7.5 \times 4.2 \times 1.0$  cm.). A spectroscopic test is said to show a little strontium in them. The crystal forms are base *c*, unit prism *m*, brachypinacoid *b*, and unit domes *o* (011) and *u* (101). All of these barite crystals, whether large or small, show strong phantom banding parallel to prism *m*, with a prominent light colored outer rim which in the small crystals is 1 mm. wide, and in the larger ones 5 mm. wide. Within the outer zone there are narrow white lines which occur at intervals normal to the face of the prism which the phantom borders. Similar barite crystals which were evidently found in the Raritan Avenue cut at the Highland Park end of the Albany Street bridge, appear in the waste shale which was dumped as fill along the river bank.

Small barite crystals which were obtained years ago from shale dredged from

the bottom of the Raritan River farther downstream, near the chapel of the New Jersey College for Women, have a blue color and prismatic habit, with elongation on the *a* axis, such as is common in barite. Forms shown on these crystals are base *c*, unit prism *m* with prism (210), pinacoids, *a* and *b*, brachydomes (012) and (056), and a pyramid, which is prominent but dull and etched. Barite crystals on gray shale, brought up in the 1930's from a deep sewer trench at the corner of Handy Street and Throop Avenue in New Brunswick, are thin, transparent, colorless rectangular tablets less than 1mm. in diameter, bounded by the three pinacoids, with the unit prism.

*Amphibole, variety Mountain Leather.* Not far from Raritan Avenue, on the Highland Park side of the Raritan River, occurs the mountain leather (a variety of hornblende) which was obtained by Roy Hopping, mineral dealer in New York City, evidently from Mr. Manley, in 1904, and placed on sale in his store. The mineral fills narrow joint cracks in massive red shales in the steep rocky river bank just downstream from the end of the concrete wall which borders a private property immediately below the Albany Street bridge. The plates of "leather" are less than 1/4 inch thick, with a grayish color like typical hornblende asbestos, having ragged edges showing non-flexible fibres. Plates several inches across may be pulled out with little difficulty. This is simply a compact form of amianthus. The pilolite (mountain cork) listed by Manchester is probably a thicker layer of the same mineral species and variety.

#### Another Copper Mine

This mine may be found in the southeast corner of a little patch of woods back of a small farmhouse, close to the main line of the Pennsylvania Railroad, near the place of junction of Livingston Avenue, New Brunswick, with Super-highway 25 (Route 1). Continuing the story from the State Geologist's report:

#### The Raritan Mine

About 3 miles southwest of New Brunswick is the old Raritan Mine. "The

main shaft was 160 feet deep, from which a tunnel was driven in a north-northeast direction. Another shaft south-east of this one did not reach the ore. All of them are now filled with water. The rock of these shafts lying at the mouth of the mine is mostly red and bluish shale. Very little trap was seen in these rubbish heaps. The ore is mostly a carbonate with some sulphide. The difficulty in working this mine was trouble with water. The workings were not far from some small dikes that are known to intrude the shales in that vicinity, and may possibly have encountered some of these. Otherwise the conditions are apparently the same as at New Brunswick."

Today there are still visible the tops of two open shafts, filled with water, on which mine timbers and debris are floating. Though the dump has all been removed, small bits of shale containing malachite stains may still be picked up, and bits of sulphide ore, including bornite.

### Carrara Captured by Jap-Americans

Carrara, a world-famous marble quarrying center, located in northwestern Italy, about 5 miles from the west coast, was captured from the Nazis on Thursday, April 12, 1945, by Americans of Japanese ancestry. The Americans were the 442nd Infantry, a part of the 5th Army commanded by Lieut. Gen. Lucien K. Truscott.

In Carrara are the celebrated quarries of fine-grained white statuary marble which have been worked for 2,000 years or more.

The Carrara quarries are noted also for beautiful minerals many of which have been distributed among collectors and museums all over the world. Among the minerals found in the quarries, all in fine crystals, are albite, barite, calcite, fluorite, pyrite, rock crystal selenite, sphalerite, sulphur, and tetrahedrite.

Carrara, a city which had a pre-war population of 50,000, is 32 miles northwest of Pisa, in a valley surrounded by marble hills.

## AMETHYST IN GEORGIA

By A. S. FURCRON

Assistant State Geologist  
Atlanta, Georgia

The purple to violet variety of quartz crystal known as amethyst has been mined in numerous localities in Georgia. Most of the finest gem stones have come from Towns and Rabun counties in the extreme northeastern corner of the State. Our depositists have produced many fine gems and museum specimens, but have received little mention in works upon the subject. This is probably because most of them have been mined in the most inaccessible parts of the mountain area. These notes are written in the hope that collectors and those interested in amethyst production will give our State more attention in the future.

The writer visited a very interesting amethyst locality August 27, 1940, with Mr. Gilbert W. Withers of Atlanta. Stones occur over a considerable area in the north end of Towns County between Tallulah River and the Blue Ridge. The Withers Gem and Mining Company had a small camp at that time upon the upper branch of Charlie Creek where several men were prospecting the amethyst veins.

To reach the locality one should go to Clayton in Rabun County, Georgia, and take the Clayton-Hiawassee Road. Turn off this road to the north at Thompson Creek, and go to Persimmon; there follow Little High Shoals Creek to the sign "Tate City", but do not take the trail to Tate City. From this point the trail follows the Tallulah River into Towns County. About one-half mile inside the Towns County line, take the road to the left on Charlie Creek.

The country rock is the usual pre-Cambrian biotite gneiss of this section of Georgia; it is frequently garnetiferous, and abundantly injected by pegmatite stringers and quartz veins. In the section along Charlie Creek the gneiss dips northwest. The amethyst veins also appear to dip northwest, and to have been intruded more or less parallel with the layers of gneiss. There are very many of these narrow veins. The amethyst varies in color

from nearly colorless through pale amethyst to a deep polk berry color. Amethyst is said to have been mined here over 50 years ago. Gem amethysts taken from this locality are believed to have the finest color of any found in North America. They resemble the famous Siberian amethyst. We have one of these beautiful cut gems weighing 52 carats on display in the State Capitol.

The old Garrett amethyst mine is in Towns County on the ridge between Fall Branch and Jack's Branch of Hightower Creek, two miles north of Titus and one mile south of Hightower Bald. Mr. R. W. Smith, former State Geologist, visited the locality February 8, 1934, and placed the following record in our files: "Amethyst quartz has been mined at various times from a small 'lead' or vein striking N. 52° W. The amethysts are found in pockets locally 3 inches across and 3 or 4 feet long which contain up to 100 pounds of amethyst crystals. The vein then pinches for 5 or 6 feet, and then widens into another pocket. The amethysts are said to be covered with a soft black dust which, when rubbed off, becomes a rusty color. The dumps are composed of reddish-brown dirt, and numerous small pieces of quartz somewhat tinged with amethyst color. Little or no white quartz is showing. Some of the amethysts grade into smoky quartz. Many of the crystals are terminated. Mining was done from a shallow trench about 30 feet long. Across the ridge on the southeast side is an old tunnel now fallen in. Mr. Ledford stated that he has found some amethysts on the surface of the ground in the valley of Jack's Branch on a continuation of the vein".

We have a suite of very nice specimens from the W. T. Smith property, Moccasin District, Rabun County. This is one of our best amethyst localities. Many fine stones were taken from this mine over a period of seven years. It is approached by way of the Worwoman Road which leads east out of Clayton. At



*Capt. Garland Peyton, State Geologist, collecting amethyst crystals on dirt road near Buckhead, Morgan County, Ga.*

*Photo by Joe Stearns  
(January 1945)*

the junction of this road with the Walhalla-Highlands Road is Mr. Smith's store, and the old workings are near by.

Amethyst was mined formerly from the Ledbetter mine, near Clayton in Rabun County. This mine is on the strike of the Smith property, and about two miles northwest of it Mr. Withers found one of his best stones on one of the old dumps there. There are 14 stones from this property on display in the State Museum in Atlanta, ranging in color from deep to pale amethyst.

Numerous deposits of amethyst are known from other parts of the State, all reported from counties in the great belt of the crystalline rocks. Few of these occurrences have been prospected or investigated.

Pale amethyst occurring in small pockets is found in Cobb County near Atlanta approximately 50 yards southeast of Howells Cemetery and just across the river from Adamsville on Gordon Road. In a field near the cemetery there is considerable quartz float. In the float pale amethyst shading from just a tinge to fairly deep color may be found. We have, also, amethyst on display from the I. H. Gilbert farm, 6 miles east of Cumming, Forsyth County, where very good specimens have been picked up in the county road. Pale amethyst crystals coat-

ed with a thin film of secondary silica are found on the W. B. Perkins' place, two miles north of Dewey Rose, Elbert County. Amethyst crystals and clusters are abundant upon the Benny Ray property two miles west of Buckhead in Morgan County where they may be picked up in the county road in large quantities. The specimen which the writer sent recently to Mr. Zodac (Editor of *Rocks and Minerals*) came from this locality.

### **Warner & Grieger Buy Out Noted Dealer!**

Editor *Rocks and Minerals*:

We wish to announce the purchase of the entire stock of the American Mineral Exchange, of Houston, Texas. We will acquire approximately 10,000 lbs. of material composed of a large variety of famous Paterson and Franklin, New Jersey minerals, Barringer Hill, Texas, and many others.

Mr. Clarence L. Brock, owner of the American Mineral Exchange, is retiring after having successfully conducted his mineral business over a period of sixteen years.

We thought you would be interested to know that this purchase is a direct result of Mr. Brock's advertisement which appeared in *Rocks and Minerals*. We answered the ad as soon as we saw it and Mr. Brock accepted our offer for his stock.

Warner & Grieger  
By Wm. J. Grieger

Pasadena, Calif.  
April 12, 1945.



## GEMS AND MINERALS IN UNEXPECTED PLACES

By FRED DUSTIN

It has many times occurred that valuable mineral deposits have been discovered by accident, and the stories of some of these finds are of intense interest, for often tragedy, romance and suffering, and occasionally, comedy are involved in the discovery, but in this paper none of these elements are involved except by inference or suggestion.

For many years, in fact from young boyhood, the author has been deeply interested in a spectacular tragedy that occurred nearly seventy years ago, known as CUSTER'S LAST BATTLE, which took place June 25-26, 1876, on the Little Big Horn River, Montana. Owing to certain elements involved, this comparatively small affair gave rise to the writing of scores of newspaper articles, dozens of magazines stories, and perhaps forty or fifty books and pamphlets with the Custer fight as the main theme. Among these writers my own name appears,<sup>1</sup> and after many years' collecting source materials for my book, I was privileged to visit the battlefield and its environs. Incidental to this trip, a few mineral specimens were collected, and the localities may be of some interest to the readers of *Rocks and Minerals*, or at least to a few of them.

In Vol. 4, Executive Documents, Second Session, 45th Congress, 1877-'78, Lieut. Edward Maguire, Engineer Officer on Gen. Alfred H. Terry's staff, in his report of the march of Col. Gibbon's command which was to play an important part of the coming battle as planned by Terry, made a statement of considerable interest to mineralogists and gem-collectors. He says of the divide between Tullock's Creek and the Big Horn: "The 'divide' became a sinuous backbone, and the ravines much deeper. . . . The sandstone occurred more frequently and in larger quantities. . . . The whole surface of the divide was covered with drift, which contained many beautiful specimens of agates."

Years ago the author had read these words, but it was before his interest in gems had reached a point where opportunity was afforded for collecting them, but somehow, the memory of the passage remained, although he never expected to visit that divide, and in fact, has never done so, but in this battlefield trip, the small party of which he was a member, went to the mouth of the Little Big Horn where it enters the Big Horn, in order to take some pictures of the place where the steamer "Far West" tied up, and where she lay when the wounded were brought down.

In the early literature the Little Big Horn was described, as a cold, clear mountain stream, in places flowing over a pebbly bed. Instead of this we saw a roily, rather warm stream, and while the pebbly bottom was evident, the pebbles were coated with mud, so that one looked like another, and as far as these covered by water were concerned, seemed like a very uninteresting lot of stones. This was in the middle of August, and the stream being low, there was a border of pebbles along the shore that had been partly washed by spring floods, and with the natural or acquired "genius" of the gem-hunter, I looked among these and found some nice chalcedony, a couple of moss agates, and several banded agates. There were four ladies in the party, and among them my moss agates and the best banded ones were distributed. Only a half-hour was spent here at the time, but later I did another half-hour's collecting, and obtained a very nice banded agate of two or three shades of yellow, the same of brown and gray. This specimen is about two inches long, one-and-a-half inches wide, and an inch thick. There was also a rose-pink chalcedony pebble, as well as several specimens of dark red jasper, and one prettily mottled, which would cut a nice gem. No more moss agates were found, but two or three years ago, there appeared in some publication, the name of which is not recalled, a statement showing that the formation bearing the

<sup>1</sup> DUSTIN, FRED, *The Custer Tragedy*; small quarto; privately printed, Ann Arbor, Michigan, 1938.



noted Yellowstone River moss agates, extends to the mouth of the Little Big Horn, and a short distance upstream, hence collectors may be able in early spring, before irrigation starts, to find some good specimens where noted. The muddy and warm water of August is due to the diverted water in the ditches, much of which flows back into the river, carrying abode mud as well as vegetable sediment.

My second experience was entirely unexpected. In the battlefield area for several miles up and down the Little Big Horn, its easterly side is bordered by steep bluffs, some of them rising above the stream to a height of three or four hundred feet. They appear to be just rounded hills, with two conspicuous peaks rising above the surrounding heights, about a mile and a quarter southwesterly from the monument on Reno Hill, and three miles northeasterly from the Custer Battle Monument.

On our last day on the field, the author, wishing to make certain observations and take a few pictures, left the rest of the party at the Custer Monument, and following battle-ridge, made his way to where Medicine Tail Coulee debouches into the Little Big Horn. From this point, he ascended the bluffs, heading for the Reno Hill Monument. As stated, the bluffs precipitate in places, but winding cattle paths form quite easy means of ascent. In some places they

have cut deeply into the soil. The bed rock hereabouts is sandstone, but one would not suspect that this cut up land was anything more than sand, gravel, or clay, (unless he was a geologist) if a stranger in those parts. However, it is just disintegrating sandstone, with a thin soil which supports a rather sparse growth of sage brush, cactus, and a coarse grass with occasional stunted juniper bushes or trees, the bright green of which is in happy contrast to the dull, sage-green of nearly all other vegetation.

Following one of the cattle-trails up the steep ascent toward the two high peaks now called Weir's Peak or Point, my eye caught a gleam in the upper edge of the cut-in path, and I picked up a shining bit of mineral that I saw at once was selenite; by more carefully examining, it was seen that the disintegrating sandstone was outcropping, with a layer of very nice fibrous gypsum, along with plates of bright selenite, and near at hand, lay a dark-brown arrowshaft scraper of chert, probably dropped by some Indian in prehistoric days. I had no time for any further exploration, but a little farther on, there were some very fine selenite crystals of the platy form, which are now carefully preserved not only as mementos of a fine experience, but as having been collected on a field where men wearing our good old army blue, fought and died on the dusky hills of the Little Big Horn.

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### **Fine Aurichalcites From Ophir, Utah**

Aurichalcite is a hydrous carbonate of copper and zinc. It is commonly green to bluish-green in color. Some of the finest specimens of aurichalcite from Utah occur as greenish-blue crusts, associated with azurite, and filling cavities in limonite in the oxidized zinc ores of the Hidden Treasure Mine in Dry Canyon, Ophir district, northern Utah.

The Hidden Treasure is a lead-silver mine which also carries some copper and zinc. Ophir is in the eastern part of Tooele County.

### **Los Lamentos, Mexico, Descloizites and Wulfenites**

From the gold mines of Los Lamentos in the northern part of the state of Chihuahua, in northern Mexico, have come superb specimens of descloizites and wulfenites.

The descloizite occurs in rosettes of beautiful, lustrous, dark brown crystals, coating matrix chiefly coarse white calcite.

The wulfenite consists of large orange-yellow to brownish cubic crystals, also on coarse white calcite which is often stained a dark brown.

## VENEZUELAN IRON RESOURCES AWAIT BROAD DEVELOPMENT

Venezuela has extensive natural resources awaiting investment and development of the internal market, it is pointed out in a survey of Venezuela's industrial possibilities by the Venezuelan Commission of Inter-American Development Commission, Washington.

While conceding that high production costs and a limited internal market raise obstacles to the creation of new industries, the report sees possibilities for the development of production for export of such products as iron, special woods, fisheries and alcohol. The report continues:

"Reproduced below are some paragraphs from the study published by the engineer J. C. Davey, adviser to the Servicio Tecnico de Mineralogia y Geologia (Mineralogical and Geological Technical Service) of the Ministry of Development, which show the enormous importance of the deposits of iron in Venezuela, and the exceptional riches with which the country has been endowed by nature.

"It has been known for a long time that immense reserves of iron ore existed south of the Orinoco River, extending from the San Felipe region to the Amacuro Delta and forming part of the Imataca Sierras. These deposits have been examined and reports on them presented since 1890. In 1939 the Venezuelan government sent a special commission headed by Doctors G. Zuloaga and M. Tello B., to study the entire area. The conclusion was reached that the total reserves exceeded 1,000,000,000 tons, which can be divided into two categories: (1) High-

grade deposits containing 65 per cent to 70 per cent of iron, such as those in El Pao, la Represalia, Manoa and Aroi; (2) deposits of a baser kind containing between 45 per cent and 50 per cent, such as those of Piacoa and La Imperial (near Los Castillos), which are estimated to contain a reserve of at least 600,000,000 tons, with an average 45.7 per cent of iron. The ores in the first group are a compound of magnetite and hematite. The others seem to be similar to the Itabira deposits in Brazil.

"These iron ores and those of Brazil possess the highest mineral content in the world, and the deposits definitely tested are large enough to supply the usual demands of American industry for several generations.

"Venezuelan iron is particularly suitable for development, all the deposits being near the Orinoco River. Tested deposits are in hills having an altitude from 100 to 200 meters above sea level, and can be very economically worked in open cuts.

"The Venezuelan Iron Mines Company (a subsidiary of the Bethlehem Steel Company) is rapidly proceeding to develop the El Pao deposits. A yearly output of 1,700,000 tons of high grade ore is expected when the enterprise begins to operate at maximum capacity. It will employ between 700 and 800 men. A modern camp is being built to attend to the needs of this new community."

## South African Jade

A very pleasing gem mineral with which some American collectors are well familiar, is the so-called South African jade which takes a beautiful polish. The mineral is a massive lime garnet, grossularite, and has been much used for ornaments and jewelry.

The mineral occurs in veins or bands up to 18 inches thick, associated with

chromite, in gabbro, on the farms Buffelsfontein No. 205 and Turfffontein No. 356, about 40 miles west of Pretoria, in the central part of Transvaal province.

Although the common color of the grossularite is green, small quantities of pale blue, cream, and pink colors also occur in the deposits.

## GREENSANDS IN NEW JERSEY

By PETER ZODAC

Greensand is a name applied to a sand or marl whose green color (generally dark green) is due to the presence of considerable glauconite. In New Jersey there are huge deposits of greensands (glauconitic marl) and these are found in a belt which extends for nearly 100 miles beginning at the extreme southwestern corner of the state and trending northeastward to the city of Perth Amboy. The belt varies from 1 to 14 miles in width and the deposit is of Cretaceous age.

The greensands of New Jersey contain lime, phosphate, and potash and have been dug for many years for use as a fertilizer. At present, however, very little is dug as prepared fertilizers, which are more efficient and perhaps even cheaper, forced the industry to shut down. Farmers, here and there along the belt, still dig some marl for local use.

Years ago when the industry was active, it gave its name to such localities as Marlboro and Marlton.

On September 7, 1941, the writer, with a group of collectors (O. W. Bodelsen,

Vincent Giordano, John S. Albanese (now in the U. S. Marines) and his son, John Jr., (now in the U. S. Army and who was recently wounded badly in Germany), paid a visit to the northern end of the belt with the expectation of examining one or more pits. But it was all in vain. We stopped at a number of places but no one who was approached could direct us to a pit — not one ever heard of greensand or marl. In Marlboro, fortune almost smiled on us. Here we chanced to meet a very old inhabitant who recollected where some pits used to be on the old Herbert farm (Herbert pits), on the northeastern edge of the village and close to the C. R. R. of N. J. He told us how to get there and we found the locality but the pits were so swampy and overgrown that it was useless to get off the road to enter them — apparently they had been abandoned for over 50 years.

Marlboro is in the northern part of Monmouth County of eastern New Jersey.

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## Iwojima Noted For Sulphur Mines

One of the little islands of the world of which the average American might never know of its existence were it not for our war with Japan is Iwojima or Sulphur Island. This little island, shaped somewhat like a pork chop, is 4 miles long and 2 miles wide. On Monday, February 19, 1945, at 9:00 a.m., the island was invaded by U. S. Marines (5th Marine Corp) under Lt. Gen. Holland M. Smith. A convoy of 800 ships under command of Vice Admiral Richmond K. Turner, landed the Marines on the southern coast of the island.

Iwojima, which is 750 miles south of Tokyo (Japan's largest city), is in the Volcano Islands group. Mt. Suribachi, on the extreme southern tip of the island and 456 ft. above sea level, is the highest

point on the island; it is an extinct volcano.

Iwojima is entirely of volcanic formation and in places it is covered many inches deep with gritty volcanic ash which makes walking rather difficult.

Iwo is the Jap word for sulphur and jima means island, its English name, therefore, is Sulphur Island. It derived its name from the huge deposits of sulphur found on the island and which were extensively mined before the war. The sulphur is chiefly in massive form but good crystals have also been found. Selen-sulphur (selenium-bearing sulphur) also occurs on the island.

Because Iwo and its neighboring islands are entirely of volcanic formation, the group are sometimes called the Volcano Islands.

## OKINAWA ISLAND

Okinawa is the largest island in the Ryukyu group or chain which consists of 55 islands (36 of them inhabited). The Ryukyu, or Luchu Islands, as they are sometimes called, stretch for hundreds of miles southwest from Japan proper, being stepping stones between the large Japanese island of Kyushu, to the northeast, and Formosa, to the southwest (Formosa belongs to Japan).

The Ryukyus lie 400 miles east off the coast of China and formerly were an independent kingdom. In the 15th century they became subject to China, who called them Luichiu (Lew-Chew, Loo-Choo, or the Luchu) Islands. In the 17th century Japan conquered the northern half of the group, thus for many years Luchu was subject to both countries but in 1879 Japan took control of them all and called them the Ryukyu Islands.

Okinawa, is, of course, the most important island in the group. It is about 70 miles long, north and south, and 10 miles wide, east and west. It is entirely of coral limestone formation. There is so much of this limestone outcropping on the island, often forming steep knife-like ridges and deep gullies, that walking in places is most tiresome. The highest points are in the northern part of the island where elevations up to 1600 ft. above sea level are reached.

The climate of the island is mild and humid with much rain. Winter is the best time to visit Okinawa as the temperature then is about 60° F., in summer it stands at 90° F., both day and night.

Naha, in the southwestern corner of Okinawa, population about 65,000, (entire island about 465,000) is the capital and largest city of the Ryukyus.

Shuri, about 3 miles northeast of Naha, was formerly the seat of government of the ancient kingdom. The castle of the ancient kings, (occupied by a Japanese garrison), is perched on top of the highest of the many coral limestone crags which are a dominant feature of Okinawa.

One interesting spot on Okinawa for a mineral collector is a limestone cave at Futemma which contains many beautiful stalactites. There is a shrine in this cave dedicated to the goddess Kwannon. Futemma is about 10 miles from Naha. Many other caves exist on the island but the one at Futemma is the most noted.

On Easter Sunday, April 1, 1945, at 8:36 a.m., the 10th U. S. Army began landing troops on Okinawa. The invasion, under command of Lieut. Gen. Simon Bolivar Buckner, Jr., was made on the southwest coast (about 10 miles north of Naha), near the mouth of the Bishi River. A huge fleet of 1400 vessels, from battleships to landing ships, went close inshore to help in establishing a beachhead. By the capture of Okinawa, it gives us bases only 325 miles from Japan.

We hope some member of the Association was in the invasion party and will collect a few of the beautiful stalactites for which the island is noted.

### Gloggnitz, Austria, Captured By Russians

Gloggnitz is a little city in northeastern Austria on the Schwarza River. It is located at the northeastern base of the Semmering (a mountain saddle 3,215 ft. high) on the boundary between the provinces of Lower Austria and Styria, 50 miles to the southwest of Vienna.

At Gloggnitz begins the Semmering railway, the first of the great Alpine railways which are remarkable for the boldness of their engineering and the beauty of their scenery.

The city, whose elevation is 1,450 ft. above sea level, is a noted summer resort. Near it a number of interesting minerals occur, the three most familiar to some American collectors are arfvedsonite, riebeckite and magnesite. Sphaeromagnesite, which consists of radial aggregates of magnesite crystals in crystalline magnesite, also occurs here.

Gloggnitz, which is in the southern part of Lower Austria, was captured by Russian troops on April 2, 1945.

## Unakite In Tennessee

Unakite is a coarse to very coarse grained granite consisting chiefly of three minerals — pistachio-green epidote, pink feldspar, and smoky quartz. It derives its name from the Unaka Mts., which separate Tennessee from North Carolina, where it was first observed by F. H. Bradley<sup>1</sup>, in 1874, who gave it its name.

Unakite takes a beautiful polish and is especially attractive when it consists essentially of epidote and feldspar. It is used chiefly as an ornamental stone.

Unakite occurs in Tennessee in Cocke County on the slopes of the following mountains — The Bluff, Walnut, and Max Patch — all in the Unaka Mts. The Max Patch occurrence is the most important. The main rock of the mountain is a coarse to medium grained gray granite (Max Patch granite). The epidote of this granite is in places partly altered into epidote and saussurite. In the extreme stage of alteration the feldspar has been so far replaced by the epidote that this mineral composes  $\frac{1}{3}$  or  $\frac{1}{2}$  of the bulk of the rock.<sup>2</sup> The unakite occurs in small narrow veins and segregated patches in the Max Patch granite. The pink feldspar is orthoclase and microcline in nearly equal proportions.

Max Patch is near the southeastern tip of Cocke County (East Tennessee) — the main mass of the mountain is in North Carolina (in S. W. Madison County). The mountain is 4,660 feet high.

1 Bradley, F. H. *Am. Jour. Sci.*, 3d ser., vol. 7, 1874, pp. 319-320

2 *Granites of the Southeastern Atlantic States*, by T. L. Watson. U. S. G. S. Bull. 426, Washington, D. C., 1910, p. 157

## Some Minerals of Montebas, France

At Montebas, Department of Creuse, in central France, tin deposits occur in pegmatite but they are worked mainly for amblygonite. Amblygonite occurs at the mine in a grayish-white color with a violet tinge. Other minerals found in the deposits are apatite (bluish masses); cassiterite (black masses and crystals — the

tin ore); petalite; turquoise (fine blue color but too porous to take a good polish so as to be used as a gem stone); wavellite (crystals with amblygonite); and wardite (colorless crystals on corroded amblygonite).

## Platinum Occurrence in South Africa

About 8 miles northwest of Naboomspruit, in central Transvaal province of South Africa, a lode deposit of platinum was discovered in June, 1923. The platinum occurred as small masses in quartz veins associated with chalcedony, chrome-bearing chlorite, hematite, kaolin, and sericite.

The deposit was worked for a number of years to a depth of over 100 ft. and along the strike for over  $\frac{1}{2}$  mile but though the platinum was sometimes found in rich masses, its total production was small and operations have been suspended.

## Beautiful Selenites Found at Bex, Switzerland

Beautiful limpid crystals of selenite (gypsum) are found in the salt mines of Bex in Switzerland. Specimens of these crystals are to be seen in many collections. Beautiful crystals of celestite, dolomite, and halite are also found in the mine.

Bex, a village of about 5,000 population, is on the north bank of the Avancon, in the S. E. part of Vaud Canton, in southwestern Switzerland.

## World's Finest Witherites Found in England

The finest crystals of witherite known occur in the lead mines at Fallowfield, near Hexham, in the County of Northumberland of northern England. The crystals are white in color, sometimes an inch or more in diameter, and up to 5 inches long, associated with galena, and occur in veins of carboniferous limestone. Witherite is barium carbonate.

Hexham, about 10,000 population, is in the southwestern part of Northumberland.



## A TRIP TO CLERMONT, FRANCE

By W. E. HOWARTH

Dept. of Geology, National Museum of Wales, Cardiff, Great Britain

The note on the petrifying springs of St. Alyre, Clermont, France, in the December, 1944, number of *Rocks and Minerals*, caused me quite a nostalgic feeling (France is the second home of many English) and started me dreaming of many happy days spent across the Channel, and led me also to wonder whether we shall be able once more to visit such places before we are too old to enjoy them fully again.

I first arrived in Clermont on December 29, 1929, with the idea of visiting the extinct volcanoes of the Auvergne at a season when the dust would be less troublesome than at the ordinary vacation time of summer or early autumn. But I had overlooked the fact that the Auvergne is high enough to be buried inches deep in snow at that time of the year, so I did very little geology! My companion caught the flu on the journey out and was a problem as I could not get him to eat anything but tangerines (small oranges) whilst he had a temperature. The rest of my time during three days was spent in visiting the one theatre and all four cinemas (movies)!

However, after my friend had recovered we were able to visit the lapidary works at Royat and the petrifying springs of St. Alyre.

The latter were very impressive on account of the rapidity with which the carbonate of lime is deposited. The spring water at a temperature 18° C. contains a high percentage of calcium and iron carbonates held in solution by the pressure also of much carbon dioxide. Most of the iron is removed, and some of the carbonated solution of calcium carbonate is distributed so as to fall drop by drop onto objects such as birds nests, though most of the water is caused to drop into gutta percha moulds of carvings, so as to form bas-reliefs in very fine-grained calcite. These are a warm cream colour with the appearance of old ivory, and as the original carvings are well executed, the calcite plaques form very attractive ornaments.

I bought, and still possess, a plaque  $4\frac{1}{2}'' \times 3\frac{1}{2}''$  with a bas-relief of a grape harvest scene. The thickness varies from  $\frac{1}{2}''$  to  $\frac{3}{4}''$  and I was informed that the time of formation was ten days. The speed of formation is reflected in the price charged which was only 20 francs, then the equivalent of 80c U. S. currency. Even allowing for possible "manipulation" of the strength of the solution, the rate of deposition is much greater than would justify the claims of some exhibitors of stalactite caves — one inch per thousand years.

By the way, mineral collecting must be very flourishing in America, to judge from the advertising pages of *Rocks and Minerals*. Here supplies get more and more restricted and I have failed to obtain a satisfactory series of quite ordinary thin sections of rocks.

### Nickel at Blaibank, Transvaal

An interesting nickel occurrence has been worked at Blaibank (Blaauwbank) which is 4 miles west of the main tin mines at Rooiberg in western Transvaal, South Africa. Here a flat dipping fissure vein, from 2 inches to 6 feet thick whose ore averages 10% nickel (also some gold), outcrops at a number of places.

Annabergite and garnierite, two apple-green nickel oxides, occur in the surface outcrops but at depth they are replaced by niccolite (nickel arsenide) of a bright metallic luster and a pale copper-red color, and gersdorffite (sulfide-arsenide of nickel) of a silver-white to steel-gray color. The niccolite and gersdorffite are embedded in a gangue of ankerite.

Rooiberg is 70 miles northwest of Pretoria.





## Autunite First Found in France

Autunite is a hydrous phosphate of uranium and calcium occurring at many localities throughout the world in thin tabular crystals or in micaceous flakes, both of a lemon-to sulphur-yellow color. It fluoresces a bright green under ultra violet light.

The mineral was first discovered, many years ago, by M. Champeau, at St. Symphorien, near Autun, France, in veins passing through granite.<sup>1</sup> Because of its uranium content it was first called uranite.

Torbernite, a hydrous phosphate of uranium and copper, occurring in thin tabular plates or as micaceous flakes but of a green color, has also been and still is, to some extent, called uranite. For some time it was thought that the two minerals were similar but a thorough analyses proved that they were distinct species. The name autunite (after Autun, France) was given to the first and torbernite (after the chemist Tober Bergmann (Lat. Torbernus) to the second.

Autun is in N. W. Saone-et-Loire Province in eastern France.

1 Dana's *System of Mineralogy*. 2nd ed. Wiley & Putnam, New York, 1844, p. 297

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## Jasper in South Africa

Jasper is quite common in South Africa where it is found in many deposits and mines. Thus attractive specimens have been found near Postmasburg, in Griqualand West, about 100 miles N. W. of Kimberley, where banded jasper is associated with hematite and sometimes is replaced by it.

The best jasper specimens, of a bright red color, are common in the Ongeluk beds of the Griquatown series in the Hay district and elsewhere in Griqualand West, and especially on the farms Koninkrans and Lucasdam where huge masses up to 4 feet square have been obtained. This jasper takes a beautiful polish.

Griqualand West is a district in the northern part of Cape Province, Kimberley is its capital.

## Gap Nickel Mine

The nickel mine at Gap, Lancaster County, Penn., was for many years the only producer of the metal in the United States. It was originally opened up as a copper mine (in 1732) but efforts to work it for copper were all failures. During mining operations large quantities of nickel ore (supposed to be pyrite as nickel was not known to occur in America) were thrown away on the dump.

In 1852, Charles Doble (afterwards manager of the mine who was better known as Capt Doble) came to the Gap mine to work as a miner. Capt. Doble was a keen eyed mineralogist who recognized immediately that the supposed worthless pyrite was another mineral entirely. Samples of it were sent to chemists in Baltimore and Boston for analyses but their reports were very unsatisfactory. Finally, in 1853, specimens were sent to Prof. F. A. Genth, in Philadelphia, who pronounced it a nickel ore. From then on the mine was worked for nickel.

The ore of the mine is a niccoliferous pyrrhotite but millerite (often in beautiful 'radiated masses'), pentlandite, and niccoliferous pyrite are also present.

The mine has been abandoned for many years.

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## Aventurine Quartz from India

A very popular stone with some collectors is green aventurine quartz. The finest specimens of this green mineral come from the Bellary District of Madras, in south central India. The quartz encloses fine plates of green chrome mica which gives it its green color.

The locality is on the road between Daroji and Kampti, on a low ridge south-east of Metra. The mineral occurs in a quartzite.

Aventurine comes from the Latin word, *aventura*, (an accident). The name was first given to glass spangled with copper which was *accidentally* discovered, many years ago, after a number of copper filings had fallen into a pot of molten glass in a factory at Venice, Italy.

## Bibliographical Notes

*The Gem-Table: By Nicola Goodwin D'Ascenzo.*

Mr. D'Ascenzo is one of the America's leading gem stone collectors and a member of the R. & M. A. His collections of rare and beautiful gems have been universally acclaimed by all who have had the privilege to see them. So insistent is he that his gems be accurately labeled, that every stone purchased by him is thoroughly tested before it goes into his collection — he does not take the seller's word for the stone's identity.

A few gems are easy to identify; the majority require care and practice; while some need to be examined by an expert before their true identity can be determined.

As an aid in gem identification, Mr. D'Ascenzo has prepared "*The Gem-Table* in which all the necessary facts are on one sheet of paper, properly arranged and classified. The Table is divided into seven sections as follows: Specific Gravity of 67 gems (beginning with amber 1.05-1.09 and ending with cassiterite 6.80-7.00); Index of Refraction for the same 67 gems (beginning with fluorite 1.43 and ending with proustite 2.70-3.00); Optics; Hardness; Natural Colors; Composition; and Principal Localities of Transparent Gem Material.

Collectors may be interested to know that bertrandite, boracite, colemanite, lawsonite, and proustite have never before been published as gem possibilities — but they are listed in the *Gem-Table*. And in like manner, labradorite has never been noted as asteriated; Mr. D'Ascenzo has a four-rayed star in that mineral and it, too, appears in the *Gem-Table*.

This very interesting and most timely *Gem-Table* is 15½ x 19½ inches in size and sells for \$1.00. Copies may be obtained from the author, Mr. Nicola Goodwin D'Ascenzo, 151 Dartmouth Rd., Bala-Cynwyd, Penn.

*Today's Facts about Brazil Gems — a report to U. S. Jewelers: By Frederick H. Pough, Ph.D.*

During 1944, Dr. Pough prepared a series of five articles on Brazil's gems which appeared in the *Jewelers' Circular-Keystone*. These articles are intensely interesting and give more information on Brazilian gems and their localities than perhaps any other ever printed in the English language. Three illustrations and one map add to the value of the series which comprise 12 pages. We heartily recommend the articles to all readers and urge that they be obtained if possible. Published by *Jewelers' Circular-Keystone*, 100 E. 42nd St., New York, N. Y.

*Handbook of Mineral Dressing (Ores and Industrial Minerals): By Arthur F. Taggart.*

The contents of this very imposing volume may be ascertained from the first paragraph in the preface which reads:

"This is Volume I of a *Handbook of Mineral Dressing*. As such it deals with the processes, largely mechanical, involved in the concentration of metalliferous ores and the beneficiation of industrial minerals. Volume II is planned to treat of the preparation of fuels and of the methods, mostly chemical, by which metalliferous and nonmetallic concentrates are rendered into primary-consumer products. The two volumes are planned thus to constitute a compendium of the arts by means of which the mineral crust of the earth is converted into the forms that are utilized by manufacturers and, in some cases, by ultimate consumers."

This volume is a great contribution to the mineral industry. It takes up the process of mineral dressing in a most thorough manner. First, it takes up the metallic minerals but grouping them under their chief element as antimony, arsenic, beryllium, cadmium, caesium, cerium, etc. Each group is taken up separately and subdivided under uses, ores, occurrences, treatment, prices, etc.

Next, nonmetallic industrial minerals are taken up in the same manner.

Then the crushing, grinding, screening and concentrating of the minerals are taken up to be followed by dewatering, filtration, drying, storage and mill transport, sampling and testing, design and construction of ore-treatment plants, etc.

The book, which contains 1915 pages, is divided into 22 sections and contains many figures and tables. It is 5½ x 8½ inches in size with a maroon flexible cover.

Published by John Wiley & Sons, Inc., 440-4th Ave, New York, N. Y. Price \$15.00.

*Mineral Resources Map of Missouri: Publication of a mineral resources map of Missouri in five colors is announced by Dr. Edward L. Clark, State Geologist and Director of the Missouri Geological Survey and Water Resources, Rolla. The map is on a scale of approximately 10 miles to the inch and shows general distribution of 21 different mineral resources. All principal processing plants and many mines, quarries, pits, oil and gas fields, oil and gas lines and railroads are shown.*

The map was prepared to meet state and nationwide requests for a composite picture of Missouri's mineral deposits. Because of the great number of known mineral deposits it was not possible to show each individual mine. Areas of known mineralization have been shown. In using the map Dr. Clark advised that the area indicated as producing a given resource does not infer that this resource is

available in commercial quantities throughout the district. Dr. Clark also points out that it was necessary to overlap one type of deposit with another type of deposit, but care was used in selecting appropriate symbols so that one can readily discern the resources present at any particular district. In portions of the map where no given mineral resource predominates the area is shown in white. This by no means condemns these particular areas for mineral production. It simply means that no operating mines have existed in the districts except small rock quarries and sand and gravel pits.

The map was printed in a large edition and will be given a wide distribution in the hope of increasing interest in the development and utilization of Missouri's mineral resources. Copies are being placed with Chambers of Commerce and business clubs throughout the State and in many large cities throughout the United States; in newspaper offices; in schools and libraries; in the industrial development departments of railroads that serve Missouri; and other places where the map may arouse interest in Missouri. Copies of this map may be obtained from the Missouri Geological Survey, Rolla, Missouri.

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**CALIFORNIA JOURNAL OF MINES AND GEOLOGY FOR JULY 1944  
STATE MINERALOGIST'S REPORT 40,  
NO. 3**

**MINES AND QUARRIES OF THE INDIANS OF CALIFORNIA**, by Robert F. Heizer and Adan E. Treganza, pp. 291-359, 11 figs., 8 maps. The background for the discovery, use, and general appreciation of minerals in this State is closely tied up with the culture of the California Indians. More than thirty mineral products and 140 aboriginal mines or quarry sites were known and used by California tribes. To present-day mineral collectors and persons interested in the history of mining in this State, *Mines and Quarries of the Indians of California* is a record of more than passing value.

**FLUORESCENT MINERALS IN THE EXHIBIT OF THE STATE DIVISION OF MINES**, by Henry H. Symons, pp. 361-368. Of some 5,000 specimens examined in the Division of Mines mineral exhibit, more than 250 have been found to fluoresce. This paper describes some of the experiments carried on by Mr. Symons, and tabulates some of the more interesting results.

**FLUORESCENT MINERALS USED IN LIGHTING AND ELSEWHERE**, by Oliver C. Ralston and A. George Stern. Reprinted from U. S. *Bureau of Mines Information Circular* 7276. pp. 369-380. This article describes fluorescence, gives definitions, gives the use of fluorescent lighting in the mineral industry, describes fluorescent minerals, synthetic minerals, activation of minerals, etc.

The July 1944 *JOURNAL* also contains an *Administrative Report*, by Walter W. Bradley (p. 288); *Current Notes* of the Geologic

Branch, by Olaf P. Jenkins (p. 289); *Progress on Revision of Bulletin 113, "Minerals of California,"* by Joseph Murdoch and Robert W. Webb (p. 290); *California Mineral Production for 1943*, by Henry H. Symons (pp. 381-383); *Accessions to the Exhibit*, by Henry H. Symons (p. 384); *Library Report*, by James M. Little (pp. 385-389); *Services of the Division of Mines* (pp. 390-392); *Publications of the Division of Mines*. Copies may be obtained at 60c each from Walter W. Bradley, State Mineralogist, Division of Mines, Ferry Building, San Francisco 11, California.

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## An Invitation From Colorado!

Editor Rocks and Minerals:

We consider *Rocks and Minerals* the best advertising medium in the United States for our line of material.

You may be interested to know that our shop is located on a little farm at the beautiful Hermosa Cliffs. Within a radius of less than one hundred miles from our place are located the famous San Juan mining areas and various other mineral deposits, agate deposits, petrified bone, wood, etc. As usual, the best of this material is in isolated spots and have to be carried to the roads by back-pack or burrow. About 25 miles northeast of our place are the Needle Mountains, one of the roughest spots in the west, with a number of peaks over 14,000 feet above sea level and the location of an early day mining camp. North of us are located the noted mining camps of Silverton and Ouray, and northwest are Rico and Telluride.

Aside from the mineral and gem stone localities we are located, also, in a paradise for fisherman and lovers of wild life, mountain scenery, etc.

We would be pleased to have you and all members of the R. & M. A. call on us when in this area, after travel restrictions are removed.

Mr. & Mrs. Karl Hudson  
Hermosa Gem and Mineral Shop

Durango, Colo.  
April 3, 1945

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## Chester County, Penn., Rutile

Chester County, Penn., once supplied the entire United States demand for rutile. The mineral was found in red to brown to almost black crystals in limestone, and also loose in the soil. Some fine crystals have been found in limestone in Logan's quarry, about 1 mile N. E. of Upland, and at the Poorhouse quarry (brilliant, ruby-red acicular crystals, up to 1 inch long and sometimes transparent, occurred in limestone). Poorhouse quarry is 1/2 mile north of Glenhall R. R. station.

## Club and Society Notes

### DR. WEBB'S LANDSCAPE L. A. M. S. Studies Geology

By means of a series of projected stereopticon slides, Dr. Robert W. Webb, Professor of Geology at the Westwood campus of U. C. L. A., gave the usual large attendance at the March 15th meeting of L. A. M. S. an excellent lesson in discriminatory observation of geologic features. Dr. Webb first analyzed the projected landscape as seen by the average layman and then proceeded to define the various elements of the landscape in terms of age, origin and probable composition, progressing wherever possible into the realm of the mineralogist by indicating the probable associations of minerals with the geologic evidence. These analyses and deductions constituted a most entertaining and instructive lesson.

Dr. Webb also gave a resume of the work he has been doing with Dr. Joseph Murdock in connection with the forthcoming completely revised edition of Bulletin 113, "Minerals of California", to be published by the Division of Mines, Department of Natural Resources of the State of California. Indications are that the new bulletin will be a most useful and reliable asset to mineralogists, both professional and amateur.

Dr. Hill, chairman pro tempore of the Committee on Junior Activities, reported that his committee, consisting of Dr. Thomas Clements, M. E. Peterson, B. Gordon Funk, and William R. Harriman, will study the desirability and practicability of establishing a distinct and separate program of junior study and guidance, under the tutelage of members of the society.

Door prizes were won by Rosalie Gotfredson, L. A. M. S. Secretary, and Arch Meiklejohn. Book winners were O. C. Smith and Howard Paget. The Society continues to enjoy the beautiful table decorations by Melba Ferguson, Hospitality Chairman, aided by the gorgeous blossoms donated at each meeting by member Edwin Hill.

(Howard Paget, Publicity Chairman, 1619 West 23d St., Los Angeles 7)

### Mineralogical Society of Southern California

At the meeting of the Society, held on March 12, 1945, Earl L. Calvert spoke on "A description and history of the copper mines of North Michigan". He was followed by H. Stanton Hill whose subject was "Geology and minerals of the copper mines of northern Michigan".

At the meeting held on April 9, Kilian Benusan spoke on "Mining mica in Brazil for the U. S. Government".

The meetings are held at the Pasadena Public Library, Pasadena, Calif.

### Mineralogical Club of Hartford

At the Annual Meeting of the Mineralogical Club of Hartford, Conn., held Wednesday evening, March 14, 1945, the following were elected to office:

President: Franklin P. Rockwell

Vice President: Gladys L. Gage

Secretary: Harriet M. Wraight,  
345 Barbour Street,  
Hartford, 5, Conn.

Treasurer: Arthur T. Safford Jr.

Member of the Executive Committee:

George P. Robinson

Our indoor meetings have been held on the second Wednesday evening of each month from October through May, at the Administration Building of the Board of Education, 249 High Street in Hartford. Attendance has increased slightly over last year even though our out-of-town members, who comprise over half of our membership, are unable to join us. These members are not expected to pay dues until transportation makes it possible for them to attend regularly again.

Our programs, with one exception, have been presented by club members and have been discussions of such subjects as Trap Rock Minerals, Sedimentary Rocks and Metamorphism, Mineral Radioactivity, and the Identification of Minerals. Our special guest and speaker in November was Mr. Edwin Skidmore of Westfield, New Jersey, who demonstrated his Cold Quartz U. V. Lamps and Fluorescent Minerals, and showed Kodachrome slides. In December we had a gala Christmas party with appropriate games and minerals as prizes and Christmas gifts for all.

During the year we have purchased the new edition of Dana and received as a gift, from Mr. and Mrs. Hills, "The Quartz Family Minerals". Mr. Robinson has made us a splendid new cabinet for our library and a unique, wooden gavel that is a facsimile of a mineralogist's hammer.

No definite schedule of outings was planned last summer but members were able to visit a few nearby places individually and in small groups.

Gladys L. Gage  
Secretary

### Paterson Mineralogical Society

A group of collectors in Paterson, N. J., under the leadership of William Casperson, Curator of the Paterson Museum, have organized a mineralogical society in their city. Meetings are to be held in the museum. At the meeting held on March 8, 1945, Mr. Casperson was the speaker whose subject was "Minerals of Prospect Park". Prospect Park, on the outskirts of Paterson, is famous for its trap rock minerals.

**New Jersey Mineralogical Society**

Samuel G. Hibben, Director of Applied Lighting, Westinghouse Electric & Manufacturing Co., was the speaker at the April 3, 1945, meeting of the Society whose headquarters are in the Public Library, Plainfield, N. J. Mr. Hibben's subject was "The influence of research in luminescent materials in the production of light."

Dr. Frederick H. Pough has presented the Society with a very fine specimen of quartz in which are imbedded two beautiful, long, multicolored tourmalines. The specimen, which was collected in Brazil by Dr. Pough, will be used as the door prize at the annual business meeting night in June.

**Colorado Mineral Society**

The April 6, 1945, meeting of the Society was devoted to a trip thru the laboratories of the Bureau of Reclamation in Denver, Colo. This was a rare opportunity for the members and many took advantage of it. The Denver Bureau is the largest of the Reclamation offices.

**Boston Mineral Club**

At the April 3, 1945, meeting of the Club, held in the New England Museum of Natural History, Boston, Mass., Edwin Skidmore was the speaker whose subject was "Fluorescence and its application to industry." Mr. Skidmore, who resides in Westfield, N. J., is Technician Specialist in Fluorescent Equipment and Machine Design of the Curtis Wright Airplane Factory.

**Pacific Mineral Society**

On March 20, 1945, a dinner meeting was held by the Society at the Asbury Apt. Hotel, Los Angeles, Calif. O. C. Smith showed some movies of placer mining that he made as a hobby. Thru the courtesy of Mr. Smith, the Society visited on March 25th the refinery of the Richfield Oil Co. at Watson Station, Calif.

**Mineralogical Society of Arizona**

Two meetings of the Society were held at the Arizona Museum, Phoenix, Ariz., on April 5 and 19, 1945. Dr. Eldred D. Wilson, of the Bureau of Mines, whose subject was "The origin of common minerals", was the speaker on the 5th. An exhibition by juniors was another feature of the meeting.

On the 19th the main attraction was an exhibit of minerals added to the Society Collection since October, 1944.

**American Gem Society  
(Northern Ohio Guild)**

A regular meeting of the Guild was held on April 10, 1945, at Western Reserve University, Cleveland, Ohio.

Dr. Donner, of the University, was the speaker whose subject was "The proper care and use of instruments in gem identification".

**Queens Mineral Society**

(Minutes of Meeting of April 5, 1945).

The meeting was called to order at 8:20 p.m. There were 7 ladies and 17 male members and friends present.

The minutes of the March meeting were read and also the accumulated communications.

Sgt. Poestkoke and his mother were distinguished visitors. Sgt. Poestkoke brought many specimens to back up the speaker's lecture.

The president reminded the members of the various courses available, sponsored by the Society with the cooperation of the Board of Education.

Mr. Marcin reported on field trips for the coming summer to Trumbull and Branchville, Conn. Due to transportation difficulties these were ruled out for the duration.

Dr. Trautz announced that the speaker for the May meeting will be Prof. Connors whose topic will be "Clouds—minerals of the air".

Mrs. Marcin suggested a college course to identify rocks megascopically. Mr. Green suggested instead that the course should be given at the meetings by those qualified to give this course in which he would cooperate. The remainder of the evening was turned over to the speaker of the evening, Mr. Green, who spoke on the "lead and zinc minerals" and how the deposits of them were formed. The meeting adjourned at 10:25 p.m.

Respectfully submitted,

T. Fredericks, Secretary

**L. A. Lapidary Society**

The L. A. Lapidary Society held its regular monthly dinner and meeting at the Friday Morning Club, Los Angeles, Calif., Monday, March 5th, 1945. Over one hundred members and friends were present. The display of cut stones was exceptionally fine. The program consisted of a panel discussion of the faceting art. Four of our members brought their faceting devices and explained the steps necessary in finishing a gem. Mr. Loren Mitchell, the program chairman, was in charge.

We were pleased that our president, Mr. R. E. Willis, was back to his accustomed good health. While he is an expert on rocks, he is not a good judge on distinguishing toad stools from mushrooms. As a result of this error, he and his family were laid up a couple of weeks from fungus poisoning.

**Arkansas Mineralogical Society**

The Society has begun the issuance of the *Arkansas Mineral Bulletin*, which is to come out quarterly. The first number, March, 1945, contains 8 pages with a number of illustrations. The chief article and a most interesting one is "Arkansas Quartz", by Dr. H. E. Wheeler. Subscription price is 35c per year. Orders should be sent to Arkansas Mineralogical Society, Route 1, Box 429-A, Little Rock, Ark.



**Maine Mineralogical and Geological Society**

At the March 30, 1945, meeting of the Society, at 119 Exchange St., Portland, Me., the program consisted of the following: "Realgar and orpiment", by Miss Christine Wyman; "Barite", by Willis True; "Gypsum", by Mrs. Alice MacLaughlin.

**State Mineral Society of Texas**

The Society held a field trip and picnic on April 15, 1945, at the famous mineral locality of Magnet Cove, Ark. The Hon. Joe W. Kimzey, formerly Arkansas State Geologist, guided the party around the Cove.

**Mineralogical Society of District of Columbia**

At the meeting held on April 20, 1945, Dr. James H. Benn, gave a talk on birthstones following which he discussed field trips. On May 5 and 6 the Society will sponsor a field trip to the famous pegmatite quarries at Amelia Court House, Va., and the amethyst localities of Jetersville and Rice, Va. The Society meets in the U. S. National Museum, Washington, D. C.

**East Bay Mineral Society**

Two meetings of the Society were held during April, 1945, at the Lincoln School, Oakland, Calif. On the 5th, James F. Cooper talked on Bells; Mr. Lamberson had on display the minerals that are used to make the different bell metals.

On the 19th, Worthen Bradley, president of the Bradley Mining Co., spoke on "Quick-silver mines of western states", illustrated by moving pictures.

**Springfield Mineralogical Society**

A regular meeting of the Society was held on April 18, 1945, at the high school in Springfield, Vt. The program consisted of talks by Chandler and Pierce on Vermont copper mines and minerals.

**Newark Mineralogical Society**

The 232nd meeting of the Society was held at the Newark Museum, Newark, N. J., on April 8, 1945. Dr. Paul Walther, of Elizabeth, N. J., was the speaker whose subject was "Uranium and radio-active minerals".

**Rochester Academy of Science  
(Mineralogical Section)**

"Factors in determining the values of fine mineral specimens", by Robert C. Vance, head of the department of mineralogy of Ward's Natural Science Est., Inc., and "Rock formation", by Miss Helen M. Foster, were the two features of the April 12, 1945, meeting.

On April 14, Dr. Wilton M. Krogman, of the University of Chicago, addressed a joint meeting of the Academy of Science with the Rochester Chapter of the N. Y. State Archaeological Association on "The physical anthropologist as a crime detector". Both meetings were held at the Rochester Museum of Arts and Sciences, Rochester, N. Y.

**Marquette Geologists Association**

Clarence R. Smith, Professor of Physics and Instructor of Geology at Aurora College, was the speaker at the meeting of the Association on April 7, 1945, which was held at the Academy of Sciences, Chicago, Ill. The subject of Prof. Smith's talk was "Wind, water and sand — a story of the Indiana dunes", illustrated by slides most of which were in color.

**Mineralogical Society**

(London, England)

A regular meeting of the Society was held on January 25, 1945, in the apartments of the Geological Society of London, Burlington House, Piccadilly W. 1, London. Lt. Col. J. V. Ramsden was the speaker whose subject was "Practical barytes mining in Devonshire".

**... With Our Dealers ...**

Ancient Buried City, of Wickliffe, Ky., is a new advertiser this month. They are offering two interesting items — a fossil flower bud and an arrow point.

Petrified dinosaur bone and petrified wood, both taking a nice polish, are the chief features this month of Marvin's Rock Shop, Durango, Colo.

Howlite which takes a nice polish — have you such a specimen? Roberts and Stevens, of Monterey Park, Calif., can supply them.

L. D. VanCleave, Joplin, Mo., who is the proprietor of the White Elephant Museum, has two introductory offers and a special for our readers. Better look them up!

Alaska, British Columbia, Montana, Nevada, and Arizona are represented this month by minerals in the stock of Hatfield Goudey, of Yerington, Nev. Get your paper and pencil out and start ordering!

The Hermosa Gem and Mineral Shop, run by Mr. and Mrs. Karl Hudson, of Durango, Colo., are stocking up heavily with choice minerals and rough gem material. See their ad for more information!

Some choice gold specimens from the Philippines that had been collected by an American and who has been a prisoner of the Japs, are offered collectors by Frank Duncan and Daughter, of Terlingua, Texas. Surely you will want one of these fine specimens!



A new California mineral — Iris or Rainbow Agate — is offered collectors by B. E. Sledge, Sr., of Oakland, Calif.

Popular Selected Minerals — Duplicate specimens of some of the most popular and best selling minerals on exhibit at their recent New York City Exhibition-Sale are featured this month by Schortmann's Minerals, of East-hampton, Mass. If you want some — order early — they will not last long!

A. J. Alessi, of Lombard, Ill., is branching out as a dealer in lapidary supplies. His first offer appears in this issue.

Ward's Natural Science Est., of Rochester, N. Y., announce the acquisition of some choice crystals of Brazilian tourmaline. Here is your opportunity to acquire one or more crystals for your collection.

J. L. Davis, of Hot Springs, Ark., now has a quartz crystal mine of his own which he is operating. If you want a nice fresh Arkansas rock crystal right out of a mine, Mr. Davis can supply it.

Another two page spread of fine mineral specimens is offered collectors by Everts L. Horton, of Bethesda, Md. Read the ad carefully as some items will surely intrigue you!

Note Warner & Grieger, of Pasadena, Calif., two page spread of lapidary equipment and a page ad of books. Do you need anything in these lines?

A pocket of rare and beautiful quartz crystals was recently found in Arkansas which has enriched the stock of the H. E. Powell Co., of Little Rock, Ark.

The most complete listing of Arkansas minerals ever offered collectors is now available from the Ozark Biological Laboratories, of Hot Springs National Park, Ark. Better order a copy — you will need it.

The unique, attractive, comparative crystal collections are still available from E. Mitchell Gunnell, of Denver, Colo. Send a stamp with your name and address for a detailed description of them.

Good small amethyst specimens, some will cut cabochons, and a number of other desirable items, are featured by the Western Mineral Exchange, of Seattle, Wash.

V. D. Hill, of Salem, Ore., has just released his new catalog, No. 18, covering cut and rough gemstones, xld minerals, loose xls, polished minerals, meteorites, fluorescent lamps and minerals, petrified wood, etc. It is an attractive 24 page price list with a number of fine illustrations. It is yours for the asking.

The Wiener Mineral Co., of Tucson, Ariz., have another list of fine mineral specimens for your special attention. Don't miss it!

Choice jades and agates are in the offing this month by Allan Branham, of Lander, Wyo. How many will you order?

Do you like choice Illinois fluorites? A. L. Jarvis, of Watsonville, Calif., has many of them in stock. How many can you use?

Agates and petrified woods, a nice assortment of each, are in the stock of A. E. Davies, of Alamo, Calif. He can supply many varieties!

Ruby silver crystals from Germany and Mexico to intrigue you. Oh, yes, Robert Roots, of Denver, Colo., has them.

Governor Simeon Willis, of Kentucky, has appointed Colonel Fain White King, Director of Archaeology, in the Department of Conservation. This is Colonel King's fourth appointment to the post of State Archaeologist. Note Colonel King's interesting ad this issue.

## Famous Bawdwin Mines Recaptured From Japs

The great Bawdwin silver-lead-zinc mines in eastern Upper Burma, India, which had been in Japanese possession for many months, were recaptured on February 21, 1945, by Chinese troops commanded by an American, Lieut. Gen. Daniel I. Sultan. The mines, among the richest deposits of their kind in the world, were captured intact — very little damage had been done to them by the Japs.

The mines were first worked by the Chinese in the 14th century. They also produce copper and a little gold.

Bawdwin is 22 miles northwest of the city of Lashio.

**BUY  
WAR BONDS  
AND STAMPS**

# VRECO

## LAPIDARY SUPPLIES



War priorities on many materials still prevent us from manufacturing lapidary equipment, but we do have available a good stock of the following supplies for the lapidary shop:

**VRECO DIAMOND SAWS** . . . give you better performance . . . longer life . . . faster cutting.

6-inch.....	<b>\$4.50</b>	12-inch.....	<b>\$ 8.75</b>
8-inch.....	<b>5.50</b>	14-inch.....	<b>11.00</b>
10-inch.....	<b>6.80</b>	16-inch.....	<b>13.75</b>

Arbor hole sizes:  $\frac{1}{2}$ ",  $\frac{5}{8}$ ",  $\frac{3}{4}$ ",  $\frac{7}{8}$ ", 1" or  $1\frac{1}{4}$ ". Be sure to specify size required.

**VRECO GRINDING WHEELS** are made expressly for us by the NORTON CO.

Size	4 x $\frac{1}{2}$	6 x 1	8 x 1	10 x 1	10 x $1\frac{1}{2}$	12 x 1	12 x $1\frac{1}{2}$	12 x 2
80, 100, 120 and 180 grit	<b>\$1.05</b>	<b>\$2.40</b>	<b>\$3.60</b>	<b>\$5.00</b>	<b>\$7.00</b>	<b>\$6.20</b>	<b>\$ 9.60</b>	<b>\$12.30</b>
220 grit	<b>1.10</b>	<b>2.60</b>	<b>3.90</b>	<b>5.30</b>	<b>7.50</b>	<b>7.50</b>	<b>10.40</b>	<b>13.30</b>
Minimum Arbor Hole	$\frac{3}{8}$ "	$\frac{1}{2}$ "	$\frac{1}{2}$ "	$\frac{5}{8}$ "	$\frac{3}{4}$ "	$\frac{3}{4}$ "	$\frac{3}{4}$ "	1"
Shipping Weight	1 lb.	3 lbs.	5 lbs.	7 lbs.	9 lbs.	9 lbs.	14 lbs.	17 lbs.

Arbor hole sizes above minimum,  $\frac{1}{2}$ ",  $\frac{5}{8}$ ",  $\frac{3}{4}$ ",  $\frac{7}{8}$ ", and 1". 12" wheels with  $1\frac{1}{4}$ " hole also available.

**VRECO DRESSING BRICKS** are an indispensable aid to keeping wheels trued.

8" x 2" x 1" Dressing Brick.....**\$ .85**

**ABRASIVE GRAIN** . . . for recoating sanding cloth, for mud sawing or lapping. Silicon-carbide grains in grit sizes 60, 80, 100, 120, 150, 180, 220, also F (240), FF (300), and FFF (400).

**50c** per lb. in single lb. lots      **30c** per lb. in 6 to 99 lb. lots  
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 (Postage extra)

**POLISH POWDER** . . . Tripoli Polishing Powder, 2 lbs.....**\$ .85**

